Business area:

Agriculture & Manufacturing

Story:

Some of the main challenges that wine manufacturers face, are:

- crop treatment with pesticides and/or fungicides for higher productivity per hectare
- accumulation of the necessary amount of sugar in the grapes for best quality wine

Humidity and drought are two of the main factors that favour the appearance of parasites and fungi on the grapes and their leaves. The amount of accumulated sunlight by the harvest over the growing season, ensures the necessary amount of sugar in the grape must. Moreover, the collection wine is produced from the grape batch with the highest quality parameters of each season. Thus, the need to have many quantitative indicators and statistical data to achieve better business outcomes.

IoT idea:

My idea is somewhat a combination between Sugar cane farmer solution (Smart Farming with Machine learning) and Movilitas (Supply chain solution), but I am focusing specifically on the industry of wine making, with several significant differences.

Depending on humidity and temperature sensor indicators installed throughout the vineyards together with geolocation sensors, the farmer determines precisely the time and location for the highest need to spread one or another type of pesticide or fungicide over the crop.

Statistical data from light and temperature sensors collected over the season, help calculate the growing degree days (or GDD), allowing the farmer to decide precisely when the grapes have accumulated the necessary amount of degrees Celsius and are ripe enough to be harvested.

Using historical sensor data, the manufacturer will be able to use the "GDD vs. sugar concentration" ratio among other indicators like soil composition and drainage to sort the production by various quality parameters to know the best batch of must and thus produce the best quality wine (collection wine) based on these parameters.

Yearly statistical data is used to make this seasons' "golden batch" as well as to compare this years' production with the previous years.

The golden batch sample parameters can be used as a future reference for the following years to analyse the degree of alteration of bottled wine over the years or make sure that the sold final product parameters are within the threshold boundaries.

Supporting the Intelligent Enterprise:

- IoT Platform provides additional insights about exceeded humidity or excessive temperature levels over a certain period thus a more precise decision can be made about the need to apply certain types of chemicals;
- The data about the accumulated GDD over the season, help estimate the best harvest period which otherwise is time consuming and increases the wine production costs.
- Through Track and Trace technology – from grapes collection box to final product (bottles) ensures accuracy and quality of the end-product.
- SAP Connected Goods – allows tracking and monitoring from raw material to final product making sure that quality is maintained for all production lots.

Business outcomes and environmental protection:

- Knowing with a higher certainty if it is needed to apply the chemicals, plus the amount and type of chemicals used (either for fungi or parasites) reduces the costs of production and not least important helps protect the environment by avoiding overuse of chemicals when it is not needed.
- Using statistical data improve storage and handling conditions in order to maintain the quality of the end product.
- Increase profitability by separating the end products on price ranges from the lowest to the highest quality batch.
- These technologies help categorise even better the wine by various quality parameters, thus making it possible to create a wider range of end products to satisfy the customers' needs.